



**RESEARCH DEPARTMENT**

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# **Transmitting aerials for the Oban television and v.h.f. sound station**

**REPORT No. E-090**

**1963/32**

**THE BRITISH BROADCASTING CORPORATION  
ENGINEERING DIVISION**

RESEARCH DEPARTMENT

**TRANSMITTING AERIALS FOR THE OBAN TELEVISION  
AND VHF SOUND STATION**

Report No. E-090

(1963/32)

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## TRANSMITTING AERIALS FOR THE OBAN TELEVISION AND VHF SOUND STATION

### SUMMARY OF INSTALLATION

Site: The site is at Druim Mor, 0.5 mile (0.8 km) south-west of Oban, grid ref: NM/850290, height 400 ft (122 m) a.m.s.l.

Support Structure: The support structure consists of a 150 ft (46 m) square-section self-supporting tower, with a 16 ft (4.9 m) cantilever topmast. The tower is oriented with one side on a bearing of 25° ETN.

General Arrangement: See Fig. 1.

Band I

Channel: Channel 4, with vertical polarization, is used. Vision and sound carriers are not offset.

Aerial: The aerial consists of two tiers each of one vertical dipole mounted on a bearing of 205° ETN and spaced 7 ft 7 in (2.3 m) from the axis of the tower. The side dimension at this height is 2 ft 9 in (0.84 m). The inter-tier spacing is  $0.95\lambda$  and the mean height 132 ft (40 m) a.g.l.

Power: Two 500 W transmitters are used.

Templet and Horizontal Radiation Pattern (h.r.p.): See Fig. 2 and Note 1.

Gain:

Mean intrinsic gain	3.3 dB
<u>Deduct:</u> losses due to possible misalignment and distribution feeders	<u>0.2 dB</u>
Mean net gain	3.1 dB
<u>Deduct:</u> loss in main feeder (type HM11)	0.4 dB
network loss	<u>0.6 dB</u> <u>1.0 dB</u>
Mean effective gain	<u>2.1 dB</u>

Band II

Carrier Frequencies: 88.9 (Light), 91.1 (Third), 93.3 (Scottish Home) Mc/s.

Aerial: The aerial consists of two tiers of crossed-dipoles; the inter-tier spacing is  $0.5\lambda$  and the mean height is 159 ft (49 m) a.g.l. The aerial is mounted on a cantilever pole above the main support tower, and is oriented with one dipole limb on a bearing of  $47.5^\circ$  ETN.

Power: Two 1 kW transmitters are used.

Templet and h.r.p.: See Fig. 3 and Note 2.

Gain:	Mean intrinsic gain	0.3 dB
	<u>Deduct:</u> losses due to possible misalignment and distribution feeders	<u>0.1 dB</u>
	Mean net gain	0.2 dB
	<u>Deduct:</u> loss in main feeder (type HM11)	0.5 dB
	network loss	<u>0.9 dB    1.4 dB</u>
	Mean effective gain	<u><u>-1.2 dB</u></u>

Programme Links:

The Channel 5 H television transmission from Fort William is received at Ardgour House and fed to Oban by a microwave link. The Light and Third sound programmes are obtained by line feed from Fort Augustus; the Scottish Home programme is fed by line from Glasgow.

Notes: Band I

1. The aerial was based on a theoretical prediction of the h.r.p. assuming a cylindrical support mast electrically equivalent to the square tower section. This approximation gives reasonable accuracy since the tower cross-section is relatively small ( $0.17\lambda$  square) and the dipole/tower spacing relatively large (about  $0.5\lambda$  from axis of tower).

Band II

2. This aerial is an existing well-known type for which the h.r.p. may be calculated accurately.

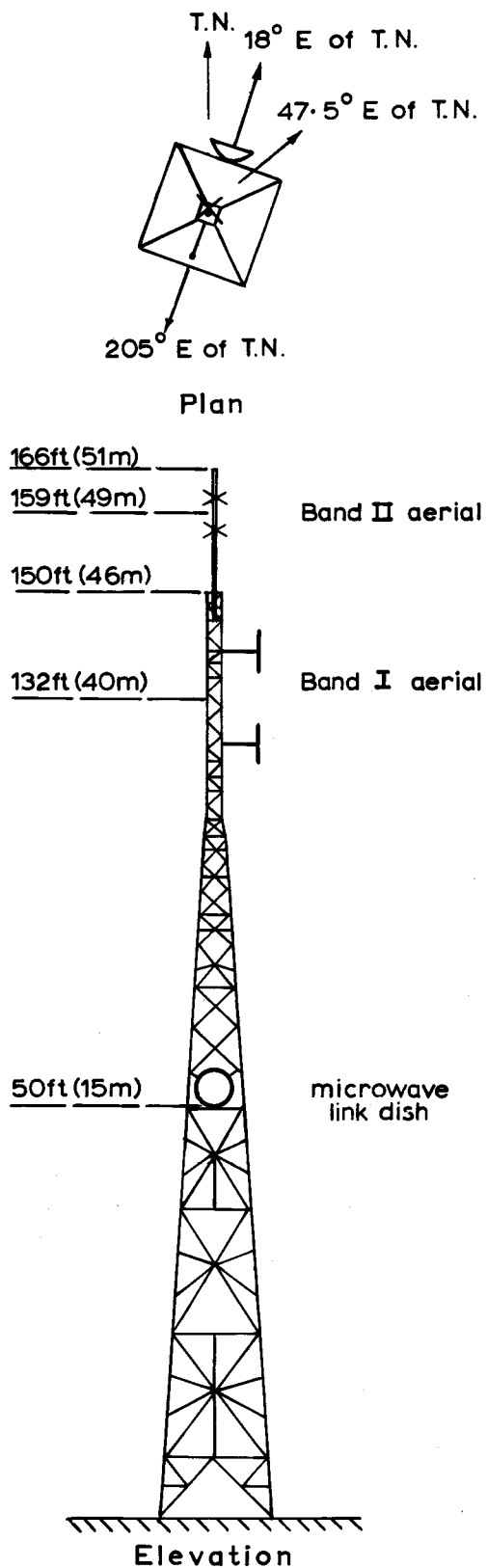
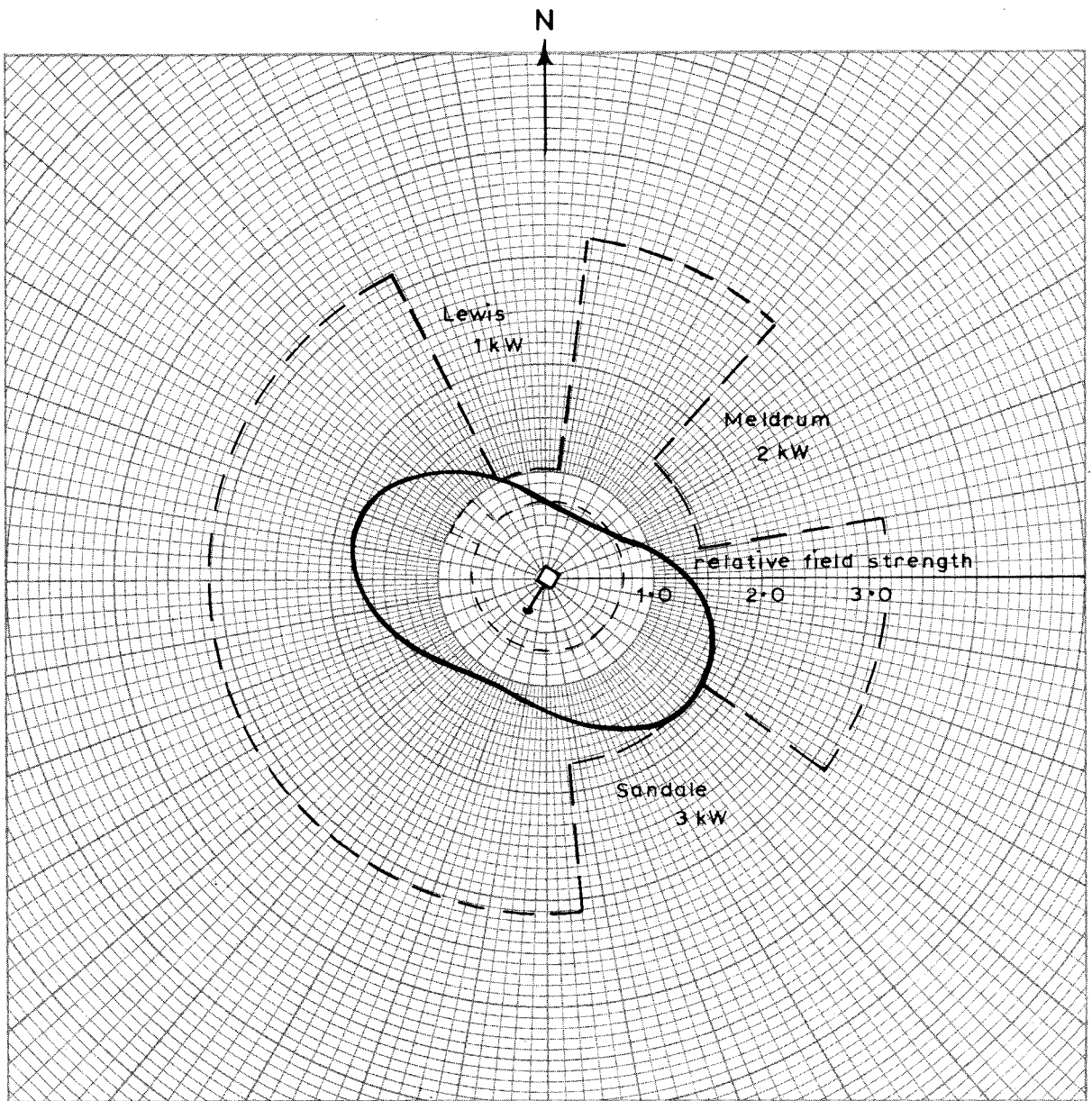


Fig.1 General arrangement of aires on tower



**Fig.2 Templet and horizontal radiation pattern of Band I aerial**

Channel 4 (Vision carrier 61.75Mc/s Sound carrier 58.25Mc/s)

**VERTICAL POLARIZATION**

Mean effective gain 2.1dB

Transmitter power 2 x 500W

Mean E.R.P. 1.5kW

———Maximum permissible E.R.P.

-----Minimum desirable E.R.P.

Unit field corresponds to an E.R.P of 1kW

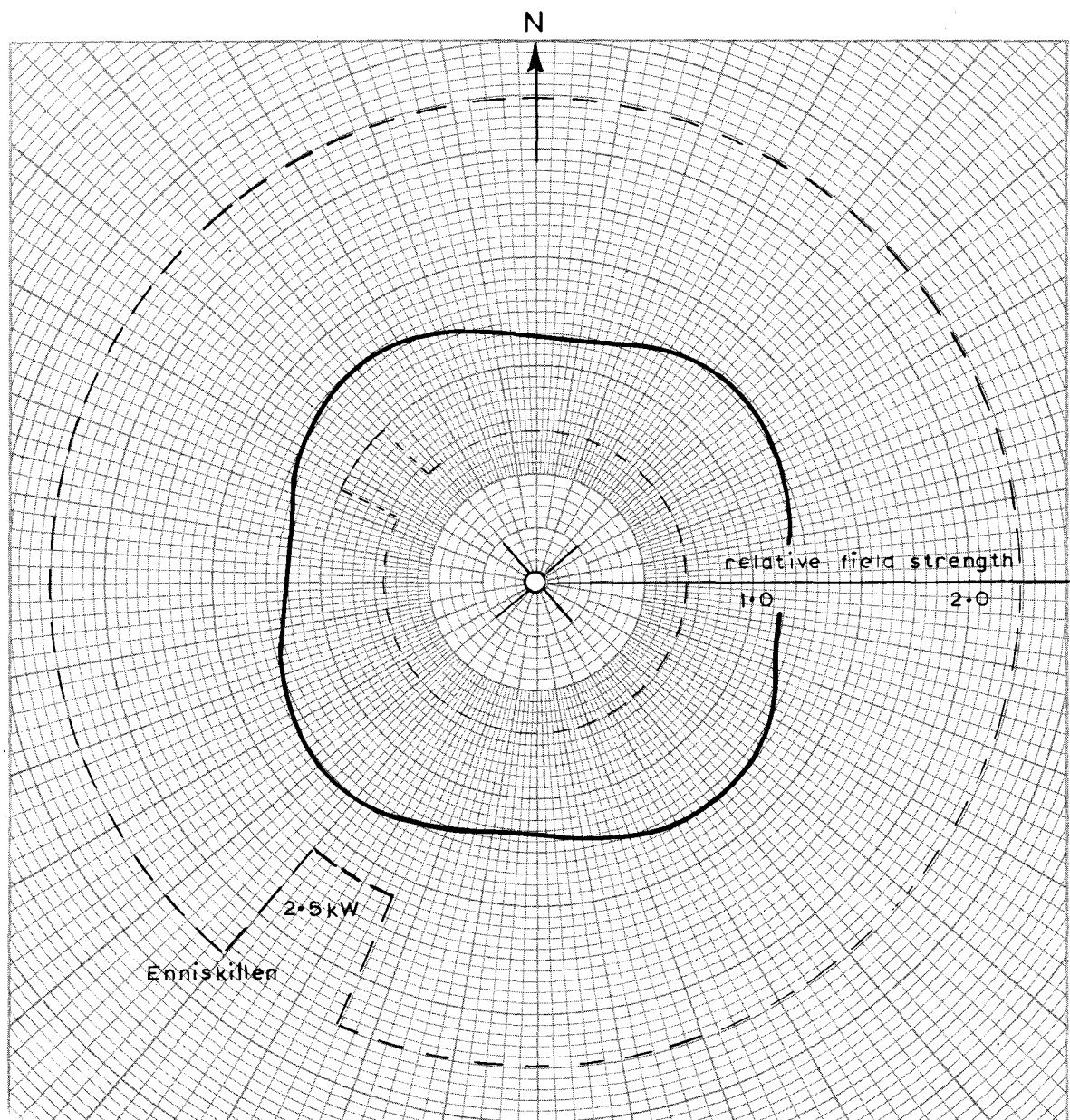


Fig.3 Templet and horizontal radiation pattern of Band II aerial

#### HORIZONTAL POLARIZATION

88.9 (Light), 91.1 (Third), 93.3 (Scottish Home) Mc/s

Mean effective gain -1.2dB

— — — Maximum permissible E.R.P.

Transmitter power 2 x 1kW

— — — Minimum desirable E.R.P.

Mean E.R.P. 1.5kW

Unit field corresponds to an E.R.P. of 1kW



